

### **WHAT IS CLAIMED IS:**

1. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

crystallizing said semiconductor film wherein the crystallized semiconductor film exhibits an X-ray diffraction pattern the orientation ratio at (111) plane of which is 0.67 or higher;

patterning said semiconductor film into at least one semiconductor island;

oxidizing a surface of the semiconductor island in an oxidizing atmosphere at a higher pressure than an atmospheric pressure, thereby forming an insulating film comprising silicon oxide on the semiconductor island; and

forming a gate electrode over the semiconductor island with the insulating film interposed therebetween.

2. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

providing said semiconductor film with a crystallization promoting material for promoting crystallization thereof;

heating said semiconductor film with the crystallization promoting material to crystallize said semiconductor film;

patterning the crystallized semiconductor film into at least one semiconductor island;

oxidizing a surface of the semiconductor island in an oxidizing atmosphere at a higher pressure than an atmospheric pressure, thereby forming an insulating film comprising silicon oxide on the semiconductor island; and

forming a gate electrode over the semiconductor island with the insulating film interposed therebetween.

3. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

providing a selected portion of said semiconductor film with a crystallization promoting material for promoting crystallization thereof;

heating said semiconductor film with the crystallization promoting material to crystallize said semiconductor film wherein the crystallization proceeds from said selected portion in parallel with said insulating surface;

patterning the crystallized semiconductor film into at least one semiconductor island;

oxidizing a surface of the semiconductor island in an oxidizing atmosphere at a higher pressure than an atmospheric pressure, thereby forming an insulating film comprising silicon oxide on the semiconductor island; and

forming a gate electrode over the semiconductor island with the insulating film interposed therebetween.

4. The method according to claim 2 wherein said crystallization promoting material comprises a metal or a metal compound and said metal is selected from the group consisting of Ni, Pd, Pt, Cu, Ag, Au, In, Sn, Pb, As and Sb.

5. The method according to claim 3 wherein said crystallization promoting material comprises a metal or a metal compound and said metal is selected from the group consisting of Ni, Pd, Pt, Cu, Ag, Au, In, Sn, Pb, As and Sb.

6. The method according to claim 2 wherein said crystallization promoting material contains one or more elements selected from the group consisting of Group VIII, IIIb, IVb and Vb elements.

7. The method according to claim 3 wherein said crystallization promoting material contains one or more elements selected from the group consisting of Group VIII, IIIb, IVb and Vb elements.

8. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

crystallizing said semiconductor film wherein the crystallized semiconductor film exhibits an X-ray diffraction pattern the orientation ratio at (111) plane of which is 0.67 or higher;

patterning said semiconductor film into at least one semiconductor island;

subjecting the semiconductor island to a heated oxidizing atmosphere at a higher pressure than an atmospheric pressure; and

forming a gate electrode over the semiconductor island.

9. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

crystallizing said semiconductor film wherein the crystallized semiconductor film exhibits an X-ray diffraction pattern the orientation ratio at (111) plane of which is 0.67 or higher;

oxidizing a surface of the crystallized semiconductor film in an oxidizing atmosphere at a higher pressure than an atmospheric pressure, thereby forming an insulating film comprising silicon oxide on the semiconductor film.

10. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

providing said semiconductor film with a crystallization promoting material for promoting crystallization thereof;

heating said semiconductor film with the crystallization promoting material to crystallize said semiconductor film;

oxidizing a surface of the crystallized semiconductor film in an oxidizing atmosphere at a higher pressure than an atmospheric pressure, thereby forming an insulating film comprising silicon oxide on the semiconductor film.

11. The method according to claim 10 wherein said crystallization promoting material comprises a metal or a metal compound and said metal is selected from the group consisting of Ni, Pd, Pt, Cu, Ag, Au, In, Sn, Pb, As and Sb.

12. The method according to claim 10 wherein said crystallization promoting material contains one or more elements selected from the group consisting of Group VIII, IIIb, IVb and Vb elements.